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Ralph H. Estey

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Résumé de l'article

Au cours des 150 ans qui séparent le moment où sir William Dawson donnait des cours sur les maladies des arbres fruitiers et des légumes, en 1856, et les cours de phytopathologie donnés par Ajjamanda Kushalappa, en 2006, plus de 29 membres du corps professoral de l'Université McGill ont donné des cours dont une partie importante portait sur la phytopathologie. Ces membres étaient des hommes et des femmes, à des niveaux académiques variés, allant du chargé de cours au professeur agrégé, travaillant sur les deux campus de l'Université McGill. Leur histoire montre qu'ils ont joué un rôle majeur dans la phytopathologie canadienne.

150 years of teaching plant pathology at McGill University

Ralph H. Estey[1]

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In the 150 years between the time Sir William Dawson was lecturing on the diseases of fruit trees and vegetables, in 1856, and the plant pathology lectures given by Ajjamanda Kushalappa, in 2006, more than 29 members of the teaching staff at McGill University have given lectures that included significant amounts of plant pathology information. These were both men and women, at all academic levels, from lecturer to full professor, and on both campuses of McGill University. Their history shows that they have played a major role in Canadian plant pathology.

[150 ans d'enseignement en phytopathologie à l'Université McGill]

Au cours des 150 ans qui séparent le moment où sir William Dawson donnait des cours sur les maladies des arbres fruitiers et des légumes, en 1856, et les cours de phytopathologie donnés par Ajjamanda Kushalappa, en 2006, plus de 29 membres du corps professoral de l'Université McGill ont donné des cours dont une partie importante portait sur la phytopathologie. Ces membres étaient des hommes et des femmes, à des niveaux académiques variés, allant du chargé de cours au professeur agrégé, travaillant sur les deux campus de l'Université McGill. Leur histoire montre qu'ils ont joué un rôle majeur dans la phytopathologie canadienne.

WILLIAM DAWSON, THE FIRST PLANT PATHOLOGY LECTURER

Plant pathology has been taught at McGill University since 1856, when the principal, John William Dawson (1820-1899), lectured on the diseases of fruit trees, small fruits and vegetables, to students of natural history and agriculture (Anonymous 1856). Dawson's course was called "Agricultural Chemistry", a name that was generally used, at that time, for courses dealing with agriculture.

Dawson was professor of natural history at McGill from 1855 until 1893. He was also professor of agriculture at the McGill Normal School from 1856 until 1870. His book, *First Lessons in Scientific Agriculture*, which was written largely for teachers in training at the Normal School, contained more than a dozen pages of information about blight, rust, smut, and various other plant diseases (Dawson 1864).

That man, who was almost always referred to as William Dawson, was one of Canada's truly great scientists. He is the only man ever to have been president of both the American Association for the Advancement of Science and, later, the British Association for the Advancement of Science. He was also the founding president of the Royal Society of Canada, and he was a fellow of the Royal Society of London. In 1884, he was made a knight, and the University of Edinburgh awarded him a Doctorate of Law (LLD), as McGill University had done in 1857 (Sheets-Pyenson 1996).

Dawson has more than 300 publications to his credit, most of which deal with some aspect of geology. Only about two dozens deal with agriculture and plant diseases, but he did include plant diseases, and crop pests in general, in his lectures.

When Dawson took a sabbatical leave, the only such leave he ever took during his active career, his teaching responsibilities were taken over by David Pearce Penhallow (1854-1910) during the semester of 1883-84.

Because of a prolonged illness, Dawson retired in 1885 after 38 years as McGill's principal. He died on November 19, 1899 (Frost 1980).

DAVID PENHALLOW FOLLOWS DAWSON

David Penhallow, who graduated from the Massachusetts Agricultural College with a B.Sc. degree, had a lifelong interest in botany. After helping establish an agricultural college in Japan and

1. Emeritus Professor, Department of Plant Science, McGill University, Macdonald Campus, 21 111 Lakeshore, Ste-Anne-de-Bellevue (Québec), Canada H9X 3V9; e-mail address: rhestey@videotron.ca

becoming the acting president of that college in 1879, Penhallow returned to North America in 1880 and became an assistant to Harvard University botanist Asa Gray. When McGill needed a botanist following the death of James Barnston, head of the Department of Botany, Principal Dawson followed Gray's recommendation and hired Penhallow as lecturer in botany.

Penhallow taught botany and plant physiology in 1883-84, and was persuaded to continue teaching at McGill after Dawson returned to his duties. He was then promoted to a professorship of botany and vegetable physiology, and the new chair was created for him through public subscription. While teaching, Penhallow also studied and did research at McGill for which he was awarded a M.Sc. degree in 1886 and a D.Sc. degree in 1904. He was interested in diseases of fruit trees before he came to McGill; in fact, it may have been his 1883 published paper on peach yellows (Penhallow 1883) that prompted Dawson to consider hiring him.

For several years, Penhallow was a widely recognised authority on diseases of fruit trees, and his first paper to be published in Canada was one on a disease of apples (Penhallow 1888). However, as he became more and more interested in Dawson's work in paleobotany, his interest in plant diseases diminished while that of his assistant, Carrie Matilda Derick (1862-1941), increased.

CARRIE DERICK, MCGILL'S FIRST FEMALE TEACHER

As a brilliant student in botany, Carrie Derick came to the attention of Professor Penhallow who, in September 1891, persuaded McGill authorities to let him hire her as his assistant. Miss Derick continued her studies at McGill and was awarded a M.A. degree in 1896. In the summer of 1898, she attended the Royal College of Science in London, England, and while on a leave of absence in 1901-02, she spent 18 months in Germany, including two semesters at the University of Bonn. Carrie Derick subsequently rose to the rank of full professor and thus became the first woman ever appointed to a full professorship in a Canadian university. Her official title became that of professor of comparative morphology and genetics, a title that was a reflection of her interest in the morphology of plants, particularly in the morphological changes that are induced by diseases. Her first public address was titled "Diseases in plants, with special reference to crown gall". In 1910, Derick was one of the few women listed in "American Men of Science" (Gillett 1990). After Penhallow died in 1910, Derick wrote an appreciation of his life (Derick 1915).

Although Professor Derick did all of her teaching at McGill's central campus, she often went to the Macdonald campus to give advice to plant pathology students. For example, she was a thesis advisor for Douglas Weir, a graduate student at the Macdonald campus whose master's degree research dealt with insect-induced plant galls.

Professor Derick maintained an interest in plant teratology, regardless of its cause, long after she retired because of poor health in 1929, when she was made McGill's first female Emeritus Professor. She died in 1941. The story of Professor Derick and the Chair of Botany at McGill has been outlined by Margaret Gillett (Gillett 1990).

When Professor Penhallow died, the question facing McGill authorities was "who will replace him?" Professor Derick had acted as head for several years and probably assumed that she would be officially appointed, but that was not meant to be. The principal, who at that time was Sir William Peterson, chose Francis Ernest Lloyd (1868-1946) to chair the department and to be Macdonald professor of botany, effective on June 12, 1912.

FRANCIS LLOYD AND GEORGE SCARTH

Francis Lloyd was a plant physiologist who included plant diseases in his lectures, especially those due to deficiencies or excesses of water, light or heat, and post-harvest diseases resulting from abrasions, rough handling, etc. He was interested in cellular pathology, or the study of healthy and unhealthy individual cells. Professor Lloyd became a member of the Quebec Society for the Protection of Plants (QSPP), and he published in the annual reports of that Society (Lloyd 1914). At least one meeting of the QSPP was held in his department at McGill University, and the Society reciprocated by making Lloyd an honorary member in 1930. In 1932-33, he was president of the Royal Society of Canada.

Lloyd's successor as chairman of the Department of Botany was George William Scarth (1881-1951), a plant physiologist who had become lecturer in botany in 1920, and rose through the ranks to become Chairman in 1934, and Emeritus Professor in 1947. Scarth was interested in physiological diseases of plants, and their cold hardiness (see more later).

NEW FACULTY OF AGRICULTURE AND MACDONALD COLLEGE

After 1907, the emphasis on plant diseases in the lectures of McGill professors shifted from the Department of Botany, located on the central campus, to the Department of Biology of the new Faculty of Agriculture, located on the Macdonald campus, where William Lochhead (1864-1927) and Francis C. Harrison (1871-1952) were teaching various aspects of plant pathology.

Lochhead was no stranger to McGill University, from which institution he had received a B.A. in 1885. After his graduation, he held a fellowship for a year at Cornell University, then taught science at the Galt and London Collegiate Institutes, and took time off to complete the program of work and study to obtain a M.Sc. degree at Cornell. In September 1898, he was appointed professor of biology and geology at the Ontario Agricultural College, a position he retained until he accepted a position at Macdonald College, the buildings of which were then still under construction.

When Macdonald College opened its doors to its first students in the fall of 1907, Lochhead was professor of biology and head of the department. The first official announcement of the college shows that Lochhead taught, among other courses, Course 6 on "Plant Diseases", which included a laboratory and field study of the common parasitic fungi of cultivated plants and methods of prevention and treatment, a study of diseased tissues, and cultural studies. He also taught Course 14 on "Biological Theories", in which he discussed evolution, heredity, genetics and mutation at a time when the theory of evolution was still a controversial subject matter.

Lochhead was somewhat more of an entomologist than a plant pathologist, and he considered a gall on a plant induced by an insect to be just as much a plant disease as a gall induced by bacteria. One of his graduate students, Douglas Weir, obtained a master's degree in 1910 for work that dealt almost exclusively with insect-induced galls. It is perhaps noteworthy that Lochhead published five short articles on plant diseases induced by fungi in *The Canadian Horticulturist* (Lochhead 1906).

In January 1912, Lochhead hired Mr. R.I. Bryce as his assistant, especially for his laboratory classes. Before Bryce left Macdonald College in 1920, he published a paper that featured a plant disease in the Annual Report of the Quebec Society for the Protection of Plants (Bryce 1915). Although there is no record of his lectures, there can be little doubt that Bryce did some teaching when assisting with the plant pathology laboratory assignments.

Francis Harrison, a native of Gibraltar, came to Canada in his late teens and attended the Ontario Agricultural College where he obtained a B.S.A. in 1892. He did some advanced studies at Cornell University and at universities in Wisconsin and Michigan as well as in Berne and Copenhagen in Europe before becoming professor of bacteriology at Macdonald College. In his first course, entitled "Agricultural Bacteriology," Harrison included bacterial diseases of plants and the bacterial decomposition of fruits, vegetables and roots (Anonymous 1907). Later, he taught a course simply entitled "Bacterial Diseases of Plants."

In 1910, Harrison was appointed dean of the Faculty of Agriculture while retaining the position of professor of bacteriology and head of the department. Administrative responsibilities and teaching left him little time for research but he did supervise the research of several graduate students who became noteworthy plant pathologists, two of whom will be mentioned later.

Some plant pathology was also being taught at the McGill School for Teachers, which was an integral part of Macdonald College until 1971. John Britain, who was lecturer in nature study and elementary agriculture from 1907 to 1912, talked about studies of insects, weeds and plant diseases (Anonymous 1907). Britain, who died in 1913, was succeeded by D.W. Hamilton, who resigned in 1919. Although Hamilton had written a book (Hamilton 1915) that contained at least two lessons on plant diseases, the plant pathological aspect of teachers' training diminished over the years and never quite regained the importance it had reached under John Britain.

The teaching of plant pathology within the Department of Biology underwent a major change when Lochhead hired William Pollock Fraser (1867-1943) as lecturer in 1912. Fraser took over Course 6, which had been initiated by Lochhead. The outline of that course remained as it was but with the addition of this statement: "A collection of 50 varieties of fungi is required of each student."

Fraser was the first Canadian-born plant pathologist-mycologist to be internationally acclaimed as such (Arthur 1912). He had received a teacher's license and an agricultural diploma from the Provincial Normal School in Truro, Nova Scotia, and he later obtained two B.A. degrees: one from Cornell University, and one from Dalhousie University. The latter degree was honorary, largely to highlight the work he had done with fungi.

Early in his career, Fraser had become interested in rust fungi, and he eventually produced a monograph on "The rusts of Nova Scotia". In that monograph, he described 92 species and two forms of rusts, several of which had not previously been described for North America. Fraser's early work on that monograph impressed officials at Dalhousie University to such an extent that they awarded him a M.A. degree on April 28, 1910. That monograph, with some additions, was not published until 1913 (Fraser 1913).

In 1915, Fraser was promoted to the rank of assistant professor, and his major course at Macdonald College became "Plant Diseases and Fungi." He taught plant pathology and mycology until he left the college to become head of a new plant pathology laboratory in Saskatoon, early in 1919.

Fraser's replacement was one of Harrison's former students, Bertram Thomas Dickson (1886-1982). Dickson was born in Leicestershire, England, and after attending the University of London for a year he came to Canada and completed a B.A. degree at Queen's University in 1915. He then went to Cornell University where, while a graduate student, he was instructor in plant pathology. Dickson left Cornell, without obtaining a degree, to join the British army in France during the First World War. Eventually, he was made Commandant of the First Army School of Agriculture, with the rank of Captain. After being wounded and getting his discharge, he returned to Canada.

ESTABLISHMENT OF A PLANT PATHOLOGY OPTION

In December 1918, Captain Dickson (he wanted to be addressed as "Captain") was appointed assistant professor in the Department of Biology, and he assumed responsibility for the courses in mycology and plant pathology that had been taught by Fraser. In 1919, the Department of Biology was split into a Department of Botany, with Dickson as its head, and a Department of Entomology, with Lochhead as its head. In the academic year 1919-20, a plant pathology "option" became available to undergraduate students, and the

department was authorized by officials at McGill University to offer graduate courses for credits toward a new degree, that of Master of Science in Agriculture (M.S.A.). In the following years, they would also offer courses that led to M.Sc. and Ph.D. degrees.

At that time, senior undergraduates had to do research and write a thesis. To make this easier, Dickson expanded undergraduate course options in plant pathology to include one on research in plant pathology. He also designed courses for graduate students because from 1921 onward, postgraduate courses could be given at Macdonald College. These included "History of Plant Pathology", "Pathologic Plant Histology", "Diseases of Field Crops", "Diseases of Fruit Crops" and "Diseases of Forest Trees and Timber". In 1922, "Advanced Plant Pathology" was added, and there was a seminar in plant pathology. In addition, a reading comprehension of Latin, French and German was required. At that time, all postgraduate work was carried out under the auspices of McGill University's Committee on Graduate Studies.

In 1922, Dickson published "Studies Concerning Mosaic Diseases" as Macdonald College Technical Bulletin No. 2, a 125-page illustrated publication that roused interest in the study of plant viruses as an aspect of plant pathology. The bulletin was part of Dickson's thesis for the Ph.D. he obtained at McGill that year. Dickson put emphasis on the physiological aspects of host-parasite interactions, and to strengthen that part of the plant pathology program, John G. Coulson (1893-1974) was added to the teaching staff as lecturer in 1921. Coulson had served in the Royal Air Force and had been a school teacher in Ontario. He had obtained B.A and M.A. degrees from Queen's University, where he had majored in botany and won a gold medal for highest standing in chemistry. In addition to his teaching of botany at Macdonald College, Coulson assisted Dickson with the teaching of plant pathology, especially the laboratory parts of the courses, some of which became Coulson's own courses.

DEPARTMENT OF PLANT PATHOLOGY

In 1926, the Department of Botany at Macdonald College became the Department of Plant Pathology, with Dickson at its head, the only one of its kind in Canada. Dickson resigned from McGill in 1927 to accept a position in Australia. Estey contended, and provided evidence in support of his contention, that the teaching of plant pathology at Macdonald College reached a high point during the Dickson regime (Estey 1994).

Dickson was succeeded by Alfred H. Gilbert, M.Sc., who taught the courses Dickson had taught, but only for three semesters. Gilbert returned to the United States in 1929 (Snell 1963).

Coulson now became chairman of the department, a position which he retained until he reached the age of compulsory retirement for that position in 1958. However, he continued to teach until 1968, when he left the area to live with his sister in Ontario. When Coulson became chairman of the department, he stopped teaching botany and devoted most of his energies toward strengthening the plant pathology program, especially through the teaching given at the graduate level. Coulson was a remarkable man. Although he never took a course nor wrote a thesis in plant pathology, he learned while on the job and eventually taught plant pathology to 118 postgraduate students and directed the thesis research of more than 50 students (Coulson 1970, personal communication). The Université de Montréal conferred upon him the degree D.Sc. *honoris causa* in 1948, and McGill University honoured him with the rank of Emeritus Professor in 1963. He taught at McGill for a total of 47 years (Estey 1974).

During the transitional period between chairmen, the department was fortunate in having a brilliant student, John E. Machacek (1902-1970), who not only earned the first Ph.D. for research in plant pathology at Macdonald College, but also became an excellent lecturer there from 1928 to 1930.

When Machacek resigned to accept a job in western Canada, he was succeeded by Dorothy Newton, who had obtained a Ph.D. at the University of Manitoba for work under the direction of Professor A.H.R. Buller. Newton was the first female member of the plant pathology teaching staff. She taught botany and mycology and assisted in the teaching of plant pathology, especially the laboratory portions of that subject, from 1930 until 1935.

In July 1931, Ross F. Suit, an authority on bacterial diseases with a Ph.D. from Iowa State University, was hired as lecturer in plant pathology. He was promoted to the rank of assistant professor two years later, a position which he held until he resigned in November 1936. During his tenure at Macdonald College, Suit assisted with the plant pathology laboratory periods and taught history of plant pathology. He was the sole author of at least one paper pertaining to plant pathology (Suit 1932), and of another one written in collaboration with graduate student E.A. Eardley (Suit and Eardley 1935).

Another one of Buller's former students, Harold J. Brodie (1907-1989), joined the teaching staff on September 1, 1935. Brodie, who eventually became a world authority on bird's nest fungi, taught mycology from 1935 until 1937. During that period, he became interested in powdery mildews of grain (Brodie 1945), and he assisted Coulson in the teaching of plant diseases. Brodie was born in Winnipeg and obtained a B.Sc. from the University of Manitoba in 1929, and a M.Sc. from the same institution one year later, under A.H.R. Buller. He went to the University of Michigan to complete his Ph.D., which he obtained in 1934. For a brief period, Brodie was the most highly trained mycologist-plant pathologist at McGill University. Due largely to conflicts with the chairman, Brodie resigned in 1937 (Brodie 1982, personal communication).

Toward the end of 1937, Ivan Herrett Crowell (1904-2003) was added to the staff as lecturer. Crowell had a B.Sc. from the University of New Brunswick, a M.A. from Miami University, and both a M.A. and a Ph.D. from Harvard University. Dr. Crowell was primarily a

mycologist who became an authority on the genus *Gymnosporangium* (Crowell 1940). He assisted in the teaching of plant pathology, especially with the laboratory portion of the courses. Crowell became so interested in handicrafts that he resigned from the Department of Plant Pathology in 1943 to devote himself full-time to that activity.

The botanical and mycological aspects of plant pathology were reinforced by the appointment of Homer J. Scoggan (1911-1986) in 1946. Scoggan was primarily a botanist, but he was an active participant in the plant pathology seminars and he emphasized the mycological aspect of plant diseases in his lectures during the year he taught at Macdonald College.

Scoggan was followed by Eric O. Callen (1912-1970), a Scot with a B.Sc. and a Ph.D. from the University of Edinburgh. Callen was primarily a botanist-mycologist, and although he did not teach any named courses in plant pathology, he included comments on the diseases caused by various fungi in his lectures, and he was an active participant in the plant pathology seminars.

This may be said of the several mycologists who followed Dr. Callen. For example, the current (2007) mycologist, Dr. Suha Jabaji-Hare, who is associate dean of the faculty, does not teach a course that is labelled "plant pathology", but her interests focus on molecular plant pathology and the mechanism of biological control of soil-borne plant pathogens. Her research, alone or in collaboration with others, often involves studies of the enhancement of fungal virulence or plant defense mechanisms (Ahn *et al.* 2004).

From the very beginning, some plant pathology has been taught in departments other than Botany, Plant Pathology or Plant Science at Macdonald College. In the early days, students in the plant pathology option were required to attend certain lectures and to have at least one laboratory session in the Department of Bacteriology (which later became the Department of Microbiology, and is now the Department of Natural Resource Sciences), and agronomy professors invariably commented on grain diseases such as the rusts and smuts in their lectures, while horticulture professors included comments on common diseases of horticultural crops, such as the scab disease of apples, in their lectures. Today, various aspects of plant pathology are still being taught by professors in other departments. For example, Dr. Hosa-Halli Ramaswami, in the Department of Food Science and Agricultural Chemistry, teaches a course called "Postharvest Fruit and Vegetable Technology", in which he discusses methods for slowing senescence and the prevention of disease in harvested plant materials. For many years, the Department of Chemistry gave lectures on insecticides and fungicides, and diploma students have always been taught how to recognize and control some of the important diseases of agricultural crops in eastern Canada.

As mentioned earlier, George W. Scarth was interested in physiological diseases of plants. From 1931 until his death in 1951, Dr. Scarth gave lectures and advice on students' research in the Department of Plant Pathology at the Macdonald Campus, and it was there that he did pioneering work that made use of infrared absorption techniques in his studies of cold injury to plants (Scarth 1944).

Ralph Antony Ludwig (1915-77) came to Macdonald College in 1940 to do research for his Ph.D., which he received in 1947. He had obtained bachelor's and master's degrees at the University of Alberta, the latter in 1939 under the supervision of plant pathologist A.W. Henry. Ludwig was appointed demonstrator in plant pathology soon after his arrival at Macdonald. In 1944, he became lecturer, and in 1945, he was appointed assistant professor. He held this position until he resigned in 1951 to work with the federal government. Ludwig taught plant physiology, including physiological plant diseases, to both diploma and degree students. His Ph.D. thesis was entitled "The physiology of hydromycotic wilting in plants, with special reference to tomato wilt". This became Macdonald College Technical Bulletin No. 20 (Ludwig 1952).

Orvil A. Olsen (1917-2004), a native of Saskatchewan with a B.S.A. from the University of Saskatchewan, came to Macdonald College in 1951 to work toward a Ph.D., and was almost immediately taken on the teaching staff. Olsen taught general plant pathology, plus a reading course on the history of plant pathology, until he resigned in 1957.

Réal L. Pelletier (1919-...), who had obtained his first degree at the Université de Montréal in 1941, completed a M.Sc. at McGill University in 1946 and a Ph.D. at the University of Wisconsin in 1953 before becoming assistant professor in the Department of Plant Pathology later that same year. Pelletier taught plant physiology and, like the preceding professors, he focused on the physiological diseases of plants. He also played a leading role in departmental seminars while rising through the ranks to become full professor in 1965, and chairman of the department in 1969. He went on leave and taught plant pathology at the University of Ghana in Legon, Ghana, in 1966-67, and at the Institut Agronomique in Rabat, Morocco, in 1970-72. During Pelletier's absence, Dr. Rajai K. Ibraham, who had a B.Sc. from the University of Cairo, a M.Sc. from the University of Alexandra, Egypt, and a Ph.D. from McGill University filled in the position. Dr. Pelletier retired in 1985, after 31 years of teaching at McGill University.

Ralph H. Estey (1916-...), who had recently completed a Ph.D. at McGill University and was teaching at the University of Connecticut, accepted an invitation to join the teaching staff at Macdonald College in 1957 to replace Olsen. Estey had obtained a B.Sc. in agriculture at McGill, a M.S. at the University of Maine, and had studied nematology at Cornell University. In 1960, with the assistance of guest lecturers, he initiated a degree-credit course in nematology, the first such course to be given in a Canadian university, and he made "History of Plant Pathology" a lecture rather than a reading course. In 1964, Estey took a leave and went to England to study nematology. During his absence, Dr. James M. Smith, from the Institute of Parasitology, taught the course on nematology, and Kennith J. Lobo, a Ph.D. candidate, taught one of the mycology courses. Estey received a Diploma of the Imperial College (DIC) from the University of London in 1965. Back at Macdonald

College, he added mycology, at two levels, to his teaching load. Previously, graduate students had to go to the central campus for courses in mycology.

Estey retired in 1983, at which time he was made Emeritus Professor, and, in 1986, he became a fellow of the Canadian Phytopathological Society. He wrote *Essays on the Early History of Plant Pathology and Mycology in Canada*, which was published in 1994 (Estey 1994). Professor Estey, now over 90 years of age, continues to work as a consulting plant pathologist, thus becoming the oldest practicing plant pathologist in Canada.

In 1960, Waldemar E. Sackston (1918-2004), who was head of the plant pathology section of the Winnipeg laboratory of the federal Department of Agriculture, joined the teaching staff of the Department of Plant Pathology at Macdonald College. Sackston had obtained a M.Sc. degree at McGill in 1940, after having received a B.S.A. two years earlier at the University of Manitoba. He had completed his Ph.D. at the University of Minnesota in 1949. At Macdonald, Sackston taught plant pathology at both the undergraduate and graduate levels until he retired in 1983, except for a lengthy leave period during which he set up a sunflower research unit in Spain. He was made Emeritus Professor of McGill University in 1987 (Punja 2004).

While Sackston was on leave, M.A. Viswanathan (1928-1978), who had completed a Ph.D. at McGill and had done two years of postdoctoral studies at the University of Geneva, in Switzerland, taught plant pathology. Viswanathan also took over Sackston's courses when the latter retired. Tragically, Dr. Viswanathan died very suddenly while attending a departmental evening seminar in 1978 (Sackston 1978). Estey took over the courses in plant pathology until a replacement could be found.

DEMISE OF THE PLANT PATHOLOGY DEPARTMENT

It is noteworthy that in 1976, the only plant pathology department in Canada ceased to exist because it was amalgamated with the Department of Agronomy and the Department of Horticulture to become the new Department of Plant Science, the chairman of which was Dr. Howard Steppler, an agronomist.

In 1967, Dr. Richard I. Hamilton, a virologist, joined the teaching and research staff of the Department of Plant Pathology as associate professor. He set up a self-contained plant virology laboratory on the fourth floor of the main building of Macdonald College, which is now known as the Herzberg Building of John Abbott College. The laboratory included specialized equipment for the identification and characterization of plant viruses. This very modern laboratory was somewhat isolated from the other plant pathology laboratories. Nevertheless, Hamilton soon had a very active group of students around him, and he was becoming well known and widely praised for his teaching and research in the realm of plant virology when he moved to British Columbia, in 1972.

Hamilton's successor was Jean F. Peterson, who had completed a Ph.D. in plant pathology at the University of Nebraska. His first postdoctoral appointment was at the University of Illinois, where he studied viruses in fungi. In September 1972, Peterson came to the Department of Plant Pathology as assistant professor. He had the unenviable task and responsibility of moving the virology laboratory Hamilton had set up to a new location in the basement of the Raymond Building. This had to be done because the authorities at McGill had rented (and later sold) most of the Macdonald College buildings to John Abbot College. In addition to teaching and doing research in plant virology, Peterson assisted Dr. Kushalappa in the teaching of a course called "Phytopathogens and Diseases", and he also taught plant anatomy. Peterson resigned on January 1, 1998, to become a farmer.

Early in 1989, the Department of Plant Science began looking for another assistant professor and in December of that year they recruited Timothy C. Paulitz, who had a B.Sc. degree from the California State Polytechnic University at Pomona, and a Ph.D. from the University of California at Riverside. At the time he was hired, Paulitz was a postdoctoral research associate at the USDA Horticulture Research Laboratory in Corvallis, Oregon. At McGill, Paulitz shared with Dr. Kushlappa the teaching of a course called "Introductory Plant Pathology" and another one called "Intermediate Plant Pathology". He also taught "Mycology, and Epidemiology and Management of Plant Diseases", and two graduate courses called "Plant Pathogenic Fungi" and "Ecology of Soilborne Pathogens". Paulitz became associate professor in 1994 and held that position until he resigned in June 2000 to return to the US. Paulitz was interested in root diseases and biological control (Paulitz and Belanger 2001). Departmental records show that while at McGill, Paulitz supervised the work of 18 M.Sc. and three Ph.D. candidates.

Ajjamada Kushalappa (nicknamed "Kush" by his colleagues), who had completed his bachelor's and master's degrees in India and had obtained a Ph.D. from the University of Florida, was teaching and doing research in Brazil when he was hired as assistant professor at McGill University, in 1986. At Macdonald College, now more commonly referred to as McGill University, Macdonald Campus, Kush has taught a wide range of courses pertaining to plant pathology at the diploma, undergraduate and graduate levels. He was promoted to an associate professorship in 1990, the same year he received a Dr. and Mrs. D.L. Bailey Award from the Canadian Phytopathological Society. He has chaired and otherwise served on several committees of that society (Kushalappa 2006, personal communication). Dr. Kushalappa continues to teach plant pathology in the 150th year of such teaching at McGill University.

Dr. Alan Watson, the director of a biopesticide research laboratory, plays a unique role within the Department of Plant Science and within the realm of plant pathology in general. While most members of that department are concerned with the development and protection of plants from diseases, Watson is interested in their mortality and how to prevent undesirable plants from spreading. His primary objective is to develop biological weed control strategies using

natural enemies, insects and diseases (see e.g. Ahn *et al.* 2004). One of the courses he teaches is called "Weed Biology and Control", and the "control" part of the course includes some plant pathology.

Adjunct professors, often men and women from the provincial and federal Departments of Agriculture, play an important role in the teaching and research carried out at McGill University. The Department of Plant Science usually has several adjunct professors attached to its staff and they often do some teaching. Although their contribution is far from insignificant, their names are not included in this history because they are not part of the continuum of McGill teachers who have taught plant pathology over the last 150 years.

CONCLUSION

McGill University may justifiably be pleased with the important role it has played in the teaching of plant pathology. There was a time in the 1970s when at least 35% of the 216 plant pathologists in Canada received all or part of their training at McGill. These included two future deans of agriculture faculties, 20 future university professors, 10 future heads of research stations or laboratories, and more than a dozen future high school biology teachers (Coulson 1970, personal communication). Because the discipline of plant pathology has passed its zenith in Canada, there has been a decreasing number of job opportunities and, consequently, a decreasing number of students specializing in plant pathology. For example, the number of plant nematologists has declined from a high of around 20 to the present low of three in all of Canada, and there is little prospect of all three of these being replaced after they retire. However, because there will be a continuing need for a few people with a knowledge of plant diseases, McGill University will continue to teach various aspects of plant pathology well into the foreseeable future.

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